

REMARKS

The Office Action mailed December 4, 2002, has been received and reviewed.

Claims 1-74 are currently pending in the above-referenced application, of which claims 38-69 have been examined.

As claims 1-37 and 70-74 have been withdrawn from consideration as being drawn to a non-elected invention, each of these claims has been canceled without prejudice or disclaimer.

Reconsideration of the above-referenced application is respectfully requested.

Information Disclosure Statements

Please note that Information Disclosure Statements were filed in the above-referenced application on May 29, 2001, January 25, 2002, and July 26, 2002, but that initialed copies of the PTO-1449's that accompanied the Information Disclosure Statements have not yet been returned to the undersigned attorney. It is respectfully requested that the information contained in the Information Disclosure Statements and listed on their accompanying PTO-1449's be considered and made of record in the above-referenced application, and that initialed copies of the PTO-1449's evidencing such consideration be returned to the undersigned attorney.

Preliminary Amendment

Also note that a Preliminary Amendment was filed in the above-referenced application on June 4, 2001, but that entry thereof into the Office file for the above-referenced application has not yet been acknowledged. If, for some reason, the Preliminary Amendment has not been entered into the Office file, the undersigned attorney will be happy to have a true copy thereof hand-delivered to the Examiner.

Rejections Under 35 U.S.C. § 102(e)

Each of claims 38-69 stands rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 6,081,429 to Barrett (hereinafter “Barrett”).

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single reference that qualifies as prior art under 35 U.S.C. § 102. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Furthermore, the identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Additionally, the elements must be arranged as required by the claim, but identity of the terminology is not required. *In re Bond*, 15 USPQ2d 1566 (Fed. Cir. 1990).

Barrett describes a test interposer 10 that is useful with ball grid array packages. The test interposer 10 of Barrett includes an array of electrically conductive vias 18 arranged over a surface thereof, as well as test pads 22 positioned adjacent to the outer periphery 14 thereof. As shown in FIG. 3A of Barrett and described in reference thereto, at col. 6, line 47, to col. 7, line 12, either the test interposer 10 or a carrier substrate 40 therefor may include spacers 28. The spacers 28 space the test interposer 10 apart from the carrier substrate 40 (col. 6, lines 58-61) and may provide support to the test interposer 10 (col. 7, lines 5-10).

Independent claim 38, as amended and presented herein, recites a semiconductor device which includes, among other things, a substrate and at least one stabilizer protruding from a surface of the substrate. The substrate has contact pads exposed at a surface thereof. The contact pads are “arranged in at least one substantially linear relationship positioned at or proximate a centerline of [the] substrate.” The at least one stabilizer is “configured to at least partially stabilize an orientation of the semiconductor device upon disposal thereof face-down over [a] test substrate.”

The description of Barrett is limited to a test interposer 10 which includes electrically conductive vias 18 that are arranged in an array over a surface thereof (*see* FIGs. 1, 1A, and 2) and test pads 22 that are positioned near a periphery 14 thereof (*see* FIGs. 1-7). Thus, Barrett neither expressly nor inherently describes a semiconductor device which has contact pads that are “arranged in at least one substantially linear relationship positioned at or proximate a centerline of [the] substrate.”

Moreover, Barrett describes the stabilizers 28 as being positionable between a test interposer 10 and a carrier substrate 40, to which the test interposer 10 and a semiconductor die 30 thereon are to be permanently secured, not to “at least partially stabilize an orientation of [a] semiconductor device upon disposal thereof face-down over [a] test substrate,” as recited in amended independent claim 38.

Therefore, it is respectfully submitted that Barrett does not anticipate each and every element of amended independent claim 38, as is required to maintain a rejection under 35 U.S.C. § 102(e). Accordingly, it is respectfully submitted that, under 35 U.S.C. § 102(e), amended independent claim 38 is allowable over Barrett.

Claims 39-52 are each allowable, among other reasons, as depending either directly or indirectly from claim 38, which is allowable.

Claim 42 is additionally allowable because, although Barrett indicates that the stabilizers 28 thereof may be formed from a polymer (col. 6, line 67), Barrett does not expressly or inherently describe that the stabilizers 28 thereof may be formed from a “photopolymer.”

Claim 44 is further allowable since Barrett lacks any express or inherent description that the stabilizers 28 thereof may have “a plurality of superimposed, contiguous, mutually adhered layers.”

Claim 48 is also allowable because Barrett does not expressly or inherently describe that the spacers 28 thereof may be elongated.

Claim 52 is additionally allowable since Barrett includes no express or inherent description that both a substrate and a test substrate may include stabilizers.

Independent claim 53, as amended and presented herein, recites a test substrate. The test substrate of amended independent claim 53 includes, among other things, a substrate and at least one stabilizer protruding from a surface of the substrate. The substrate includes test pads that are “arranged in at least one substantially linear relationship and configured to communicate with corresponding contact pads which are arranged in at least one substantially linear relationship which is positioned at or proximate a centerline of a semiconductor device to be disposed face-down” thereover. The at least one stabilizer is “configured to at least partially stabilize the semiconductor device upon disposal thereof face-down over the test substrate.”

Barrett lacks any express or inherent description that either the electrically conductive vias 18 or test pads 22 of the test interposer 10 thereof or the terminals 42 of the carrier substrate 40 thereof may be “arranged in at least one substantially linear relationship and configured to communicate with corresponding contact pads which are arranged in at least one substantially linear relationship which is positioned at or proximate a centerline of a semiconductor device to be disposed face-down” thereover.

Moreover, the description of Barrett is limited to a test interposer 10 that is configured to have a semiconductor die 30 permanently secured thereto. Barrett does not expressly or inherently describe a test substrate, which is well known in the art to be configured to temporarily receive semiconductor devices for testing thereof, that includes one or more stabilizers protruding from a surface thereof.

Thus, Barrett does not anticipate each and every element of amended independent claim 53. It is, therefore, respectfully submitted that, under 35 U.S.C. § 102(e), amended independent claim 53 is allowable over Barrett.

Each of claims 54-59 is allowable, among other reasons, as depending either directly or indirectly from claim 53, which is allowable.

Claim 56 is additionally allowable because, although Barrett indicates that the stabilizers 28 thereof may be formed from a polymer (col. 6, line 67), Barrett does not expressly or inherently describe that the stabilizers 28 thereof may be formed from a “photopolymer.”

Claim 58 is further allowable since Barrett lacks any express or inherent description that the stabilizers 28 thereof may comprise “a plurality of superimposed, contiguous, mutually adhered layers.”

Claim 59 is additionally allowable since Barrett includes no express or inherent description that both a substrate and a test substrate may include stabilizers.

Independent claim 60, as amended and presented herein, recites an assembly of a semiconductor device and a test substrate. The assembly includes a test substrate, a semiconductor device, and at least one stabilizer between the test substrate and the semiconductor device. The test substrate of amended independent claim 60 includes a plurality of test pads that are arranged in at least one substantially linear relationship. The semiconductor device includes a “plurality of contact pads [that are] arranged in at least one substantially linear relationship which is located at or proximate a centerline of [the] semiconductor device.”

Rather than describing that stabilizers 28 may be positioned between a semiconductor device and a test substrate, or even between the semiconductor die 30 and the test interposer 10 thereof, Barrett describes that the stabilizers 28 are configured to be positioned between the test interposer 10 and a carrier substrate 40 therefor, to which the test interposer 10 is to be permanently secured. *See, e.g., col. 2, lines 28-30; col. 2, line 53, to col. 3, line 2; col. 6, lines 25-32.*

Moreover, Barrett neither expressly nor inherently describes that either the semiconductor die 30 thereof or the test interposer 10 thereof includes contact pads that are “arranged in at least one substantially linear relationship which is located at or proximate a centerline of [the] semiconductor device,” as recited amended independent claim 60.

For these reasons, it is respectfully submitted that Barrett does not anticipate each and every element of amended independent claim 60 and, therefore, that, under 35 U.S.C. § 102(e), amended independent claim 60 is allowable over Barrett.

Claims 61-69 are each allowable, among other reasons, as depending either directly or indirectly from claim 1, which is allowable.

Claim 63 is additionally allowable since Barrett includes no express or inherent description that both a substrate and a test substrate may have stabilizers protruding from respective surfaces thereof.

Claim 64 is additionally allowable because, although Barrett indicates that the stabilizers 28 thereof may be formed from a polymer (col. 6, line 67), Barrett does not expressly or inherently describe that the stabilizers 28 thereof may be formed from a “photopolymer.”

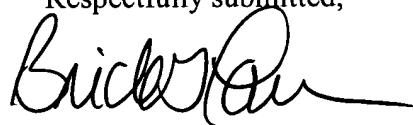
Claim 66 is further allowable since Barrett lacks any express or inherent description that the stabilizers 28 thereof may comprise “a plurality of superimposed, contiguous, mutually adhered layers.”

In view of the foregoing, withdrawal of the 35 U.S.C. § 102(e) rejections of claims 38-69 is respectfully requested.

CONCLUSION

It is respectfully submitted that each of claims 38-69 is allowable. An early notice of the allowability of these claims and an indication that the above-referenced application has been passed for issuance are respectfully solicited. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,



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Date: March 4, 2003

Enclosure: Version With Markings to Show Changes Made

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please amend the claims as follows:

38. (Twice amended) A semiconductor device, comprising:

a substrate having contact pads exposed at a surface thereof, said contact pads being arranged in at least one substantially linear relationship positioned at or proximate a centerline of said substrate and being configured to communicate with corresponding test pads of a test substrate upon disposing said substrate [facedown] face-down over said test substrate;
and

at least one stabilizer protruding from said surface, said at least one stabilizer being configured to at least partially stabilize an orientation of the semiconductor device upon disposal thereof [facedown] face-down over said test substrate.

39. (Twice amended) The semiconductor device of claim 38, wherein said at least one stabilizer protrudes from said surface at most a distance between a plane of said surface of said substrate and a plane of a surface of said test substrate upon disposing said substrate [facedown] face-down over said test substrate.

52. (Twice amended) The semiconductor device of claim 38, wherein said test substrate also includes at least one stabilizer configured to at least partially stabilize said substrate upon disposing said substrate [facedown] face-down over said test substrate.

53. (Twice amended) A test substrate, comprising:

a substrate having test pads exposed at a surface thereof, said test pads being arranged in at least one substantially linear relationship and configured to communicate with corresponding contact pads which are arranged in at least one substantially linear relationship which is positioned at or proximate a centerline of a semiconductor device to be disposed [facedown] face-down over said substrate; and

at least one stabilizer protruding from said surface, said at least one stabilizer being configured to at least partially stabilize the semiconductor device upon disposal thereof [facedown] face-down over [a] the test substrate.

54. (Twice amended) The test substrate of claim 53, wherein said at least one stabilizer protrudes from said surface at most a distance between a plane of said surface of said substrate and a plane of a surface of said semiconductor device upon disposing said semiconductor device [facedown] face-down over said substrate.

60. (Amended) An assembly of a semiconductor device and a test substrate, comprising: a test substrate with [at least one test pad] a plurality of test pads exposed at a surface thereof and arranged in at least one substantially linear relationship; a semiconductor device with [at least one contact pad] a plurality of contact pads exposed at a surface thereof, said plurality of contact pads being arranged in at least one substantially linear relationship which is located at or proximate a centerline of said semiconductor device, said surface of said semiconductor device facing said surface of said test substrate with said [at least one contact pad] plurality of contact pads in communication with corresponding test pads of said [at least one test pad] plurality of test pads; and at least one stabilizer disposed between said test substrate and said semiconductor device.

67. (Amended) The assembly of claim 60, wherein said at least one stabilizer extends between a plane of said surface of said test substrate and a plane of said surface of said semiconductor device at most a distance between said planes of said surfaces upon establishing communication between said [at least one test pad] plurality of contact pads and said [at least one contact pad] corresponding test pads.